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Cultivating Critical Thinking Skills in Early Childhood through Inquiry-Based Learning Models Grounded in Teachers' Experiences

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Abstract

This study aims to describe the implementation of inquiry-based learning models, grounded in teachers' teaching experiences, to enhance critical thinking skills in early childhood at RA Nurul Haq and TKIT Umar Bin Khatab Kudus. Using a qualitative descriptive approach with a case study model, the research investigates the processes and outcomes of inquiry-based learning. Data were collected through observations, interviews, and document reviews, focusing on children aged 4-6. Results indicate that the inquiry-based learning model significantly enhances children's critical thinking skills when applied by certified and experienced teachers. This model promotes balanced cognitive, affective, and psychomotor development through systematic exploration and problem-solving activities. However, challenges persist for non-certified teachers due to limited training. The study's implications are substantial for early childhood education, as implementing an inquiry-based learning model can improve critical thinking skills essential for children's academic and personal growth. It prepares them to face 21st-century challenges such as critical thinking, creativity, communication, and collaboration. Limitations include the study's focus on a specific demographic and the disparity in training and certification levels among teachers, highlighting the need for comprehensive professional development programs. Future research should expand the scope to include a broader range of educational settings, investigate the long-term effects of inquiry-based learning on critical thinking skills, and explore integrating inquiry-based models with other teaching strategies to maximize their effectiveness. In conclusion, this study underscores the positive impact of an inquiry-based learning model, grounded in teachers' teaching experiences, on enhancing critical thinking skills in early childhood education.

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Introduction

Developing critical thinking skills in early childhood is pivotal for individual growth and societal progress. Critical thinking enables children to evaluate evidence, assumptions, and logic underpinning others' ideas, fostering independent thought and problem-solving abilities (Nasution, 2018; Syafi'i et al., 2021). Despite its importance, research has shown that early education in many settings remains teacher-dominated, limiting children's active engagement and critical thinking development (Nuryanti et al., 2018). This teacher-centric approach can hinder creativity and the ability to think critically, as observed in educational institutions such as RA Nurul Haq and TKIT Umar Bin Khatab Kudus. Consequently, there is a pressing need to shift towards more student-centered learning models to enhance critical thinking in young learners. Integrating inquiry-based learning models is one approach that promises to foster a more engaging and reflective learning environment (Arief et al., 2020; Persky et al., 2019).

Previous studies have emphasized the necessity of critical thinking skills in early childhood education. Johnson (Putra & Sudarti, 2015) highlighted that these skills are essential for evaluating and investigating evidence, assumptions, and logical reasoning (Nasution, 2018; Syafi'i et al., 2021). However, many educational practices still rely heavily on teacher-led instruction, which can stifle critical thinking and creativity among students (Nuryanti et al.,

2018). Observations at RA Nurul Haq and TKIT Umar Bin Khatab Kudus revealed that inquiry-based learning models have not been maximally implemented, leading to passive learning environments. This situation underscores the importance of adopting teaching models that foster independent exploration and critical thinking (Ardini & Lestaringrum, 2018; Sari et al., 2020). Moreover, the effectiveness of inquiry-based learning in developing critical thinking has been supported by various studies across different educational contexts (Probine et al., 2023; Rothuizen, 2022).

Inquiry-based learning models are effective tools for promoting critical thinking skills. These models encourage students to connect learning concepts with real-world experiences through observation and meaningful activities, enhancing their critical thinking abilities (Arief et al., 2020; Persky et al., 2019). Studies have shown that children in environments prioritizing inquiry-based learning exhibit higher creativity and problem-solving skills (Suryani et al., 2020). Nonetheless, the implementation of such models in early childhood education remains inconsistent and often hindered by various factors, including teachers' instructional methods and the lack of targeted play activities (Ardini & Lestaringrum, 2018). The positive impacts of inquiry-based learning extend to various cognitive and social development aspects, as indicated by research on guided discovery models (Wihardjo, Nurani, & Ramadhan, 2020; Sigirtmac, 2020).

The benefits of inquiry-based learning extend beyond critical thinking. This model supports the development of competencies such as information retrieval, evaluation, and utilization through a structured research process (Wihardjo, Nurani, & Ramadhan, 2020; Sigirtmac, 2020). The inquiry process begins with observation and progresses to conducting meaningful activities, thereby linking knowledge acquisition with everyday life (Fadzil, 2017). Despite these advantages, many early childhood education programs still focus on teacher-directed learning, which limits opportunities for children to engage in independent discovery and critical thinking (Sari et al., 2020). Implementing inquiry-based learning has improved student responsibility, interest, and engagement in the learning process, fostering a more dynamic and interactive classroom environment (Han, Blank, & Berson, 2017; İnönü et al., 2024).

There is substantial evidence that teacher-dominated instruction impedes the development of critical thinking skills in early childhood (Probine et al., 2023; Rothuizen, 2022). The teacher should facilitate rather than direct learning, providing opportunities for children to explore and construct their understanding (Probine et al., 2024; Land, 2023). This pedagogical shift requires teachers to adopt inquiry-based approaches that encouraging active participation and critical questioning among students (Escamilla & Meier, 2018). However, transitioning to such methods is often challenging due to entrenched traditional teaching practices and insufficient teacher training (Han, Blank, & Berson, 2017). Additionally, collaborative research in early childhood education has highlighted the importance of flexible and adaptive teaching practices that align with inquiry-based learning principles (Robson, 2022; Elwick & Green, 2020).

Despite the recognized importance of inquiry-based learning, its implementation is not without challenges. Teachers' lack of experience with inquiry-based methods, limited resources, and inadequate professional development opportunities can hinder effective application (Zoupidis, Tselfes, & Kariotoglou, 2023). Additionally, there is a need for a clear pedagogical foundation to support inquiry-based practices in early childhood education, reducing reliance on separate ethical codes in outcome-oriented systems (Rothuizen, 2022). Addressing these limitations is crucial for maximizing the potential of inquiry-based learning to enhance critical thinking skills in young children. Developing professional learning communities and ongoing teacher training can support the effective integration of inquiry-based approaches in early childhood settings (Escamilla & Meier, 2018; Kewalramani & Veresov, 2022).

This study explores the implementation of inquiry-based learning models based on teachers' teaching experiences to improve critical thinking skills in early childhood at RA Nurul Haq and TKIT Umar Bin Khatab Kudus. By focusing on teachers' experiences, this research seeks to identify effective strategies for integrating inquiry-based approaches in early childhood education. The findings are expected to contribute to the field by providing insights into the

practical application of inquiry-based learning and its impact on developing critical thinking skills in young learners. This study's outcomes will inform future educational practices and policy decisions, promoting a shift towards more student-centered learning environments. By investigating the challenges and successes of implementing inquiry-based learning, this research aims to support the broader educational goal of fostering critical, independent, and creative thinkers from an early age (Hirst, 2019; Siriboe & Harfitt, 2018; Probine et al., 2024).

Methods

This study employed a qualitative descriptive approach with a case study model to investigate the implementation of inquiry-based learning models to enhance critical thinking skills in early childhood education. The research was conducted at RA Nurul Haq and TKIT Umar Bin Khatab Kudus, focusing on analyzing and uncovering the implementation process of inquiry-based learning, its impact on early childhood critical thinking skills, and the progress in early childhood education as influenced by teachers' teaching experiences. Data collection techniques included observation, interviews, and documentation. Observations were conducted to identify and define research problems by monitoring teachers' activities throughout their teaching sessions. Interviews with school principals, teachers, and parents were conducted to gather data pertinent to the research focus, ensuring the questions remained relevant to the study's objectives. Documentation involved the review of official documents from the two institutions, such as organizational structures, vision and mission statements, annual and semester programs, lesson plans, observation results, student assessments, and photographs of learning activities.

The research involved observations of teaching activities in groups A (ages 4-5) and B (ages 5-6) at both RA Nurul Haq and TKIT Umar Bin Khatab Kudus, with a total of eight teachers (four certified and four non-certified). The subjects of the study included the school principals and classroom teachers. Primary data sources comprised interviews with school principals and teachers, while secondary data were obtained from relevant literature studies. Data analysis followed the qualitative model proposed by Miles and Huberman (1994), involving data reduction, data display, and conclusion drawing (Sugiyono, 2012). The study incorporated triangulation by cross-verifying data from multiple sources and methods to ensure reliability and validity. The consistency of observations, interview responses, and documentation was examined to understand the implementation and its outcomes comprehensively. Detailed field notes, audio recordings, and transcriptions were maintained to support the analysis and enhance the credibility of the findings.

Result

This study focuses on implementing an inquiry-based learning model, grounded in teachers' teaching experiences, to enhance critical thinking skills in early childhood at RA Nurul Haq and TKIT Umar Bin Khatab in Kudus. RA Nurul Haq is a formal educational institution under the Nurul Haq Foundation in Prambatan Village, Kaliwungu District, Kudus Regency. It serves 240 students with a teaching staff 14, including 5 certified teachers and 9 non-certified teachers. The institution comprises 5 groups for 4-5-year-old children and 6 groups for 5-6-year-old children. TKIT Umar Bin Khatab, a formal educational institution, is managed by the El Fath Education Foundation in Demaan Village, Kota District, Kudus Regency. TKIT Umar Bin Khatab has 213 students and 21 staff members, including 9 certified teachers, 8 non-certified teachers, and 4 administrative staff.

The inquiry-based learning model emphasizes balanced cognitive, affective, and psychomotor development, making learning more meaningful. Meaningful and enjoyable learning is crucial for children. Teachers' methods or strategies to prepare lesson plans, reflect on teaching, implement processes, and conduct evaluations are pivotal to the success of teaching and learning activities. This model engages students' abilities to explore and investigate

systematically, critically, logically, and analytically, allowing them to formulate their findings confidently. Consequently, this approach enhances the students' critical thinking skills.

Table 1. The syntax or steps of the inquiry-based learning model are generally as follows (Gunardi, 2020)

Stage	Description
Stage 1: Orientation	The teacher conditions students to be ready to engage in the learning process, explains the topic, objectives, and expected learning outcomes, outlines the main activities students need to perform to achieve the goals, and highlights the importance of the topic and learning activities to motivate students.
Stage 2: Formulating Problems	The teacher guides and facilitates students to formulate and understand real-world problems.
Stage 3: Formulating Hypotheses	The teacher assists students in developing hypothesis-formulating skills by asking various questions that encourage students to propose tentative answers or possible solutions to the problems under study.
Stage 4: Collecting Data	The teacher guides students by asking questions that prompt them to seek the necessary information.
Stage 5: Testing Hypotheses	The teacher guides students in determining the most accepted answers based on the data and information gathered. The key aspect of testing hypotheses is ascertaining students' confidence levels in the answers provided.
Stage 6: Formulating Conclusions	The teacher assists students in describing the findings obtained from testing the hypotheses. To achieve accurate conclusions, the teacher should be able to point out relevant data to the students.

To enhance critical thinking skills in early childhood, continuous stimulation is necessary to develop decision-making abilities, creative thinking, and problem-solving skills in line with 21st-century challenges: critical thinking, creativity, communication, and collaboration. Critical thinking skills have five indicators (Reeder, 1984; Sofri Fikri Arif & Nur Cahyono, 2020), which are:

- a. Basic Clarification, including (1) formulating a question, (2) analyzing arguments, and (3) asking and answering clarification questions.
- b. The Bases for a Decision include (1) considering the credibility of a source, (2) observing and considering the results of observations.
- c. Inference, including (1) making deductions and considering the results of deductions, (2) making inductions and considering the results of inductions, and (3) making and considering the value of decisions.
- d. Advanced Clarification, including (1) identifying terms and considering definitions, (2) referring to unstated assumptions.

3.1. Implementation of the Inquiry-Based Learning Model to Enhance Critical Thinking Skills Based on Teaching Experiences at RA Nurul Haq and TKIT Umar Bin Khatab

The results of observations through interviews with the principal, teachers and document review about the stages of planning a character education project in strengthening the Pancasila student profile through local culture at TK Sukoharjo 01 are as follows:

Research findings indicate that the implementation of the inquiry-based learning model to enhance critical thinking skills by certified teachers with 25-30 years of teaching experience at RA Nurul Haq and TKIT Umar Bin Khatab has been successful. The inquiry-based learning process at RA Nurul Haq Kudus, applied to children aged 4-6 years, employs a guided inquiry model where teachers facilitate the development of topics or questions. In this process, children draw answers or products, observe each activity presented by the teacher, choose their activities, explore the provided objects, communicate their conclusions, and complete assessments.

The application of the learning model by certified teachers with 15 years of teaching experience at TKIT Umar Bin Khatab to enhance critical thinking in children aged 4-6 years shows that these teachers are eager and capable of learning. The process begins with planning,

implementation, and evaluation, and most children appear enthusiastic about the teacher's explanation of activities. They generate new and creative ideas through play in various activities. The certified teachers at TKIT Umar Bin Khatab implement the ABCDE inquiry model, which involves: 1) Observing objects to foster curiosity. 2) Asking questions to formulate problems. 3) Searching for findings and concluding. 4) Discussing to communicate findings and justify conclusions. 5) Exploring to deepen knowledge through application in new situations. Young children are more interested in learning through play, making the inquiry-based model highly suitable for enhancing their critical thinking skills.

Furthermore, research on non-certified teachers at RA Nurul Haq with 4-5 years of teaching experience shows that they sometimes struggle with implementing the inquiry-based model for young children (aged 4-5 and 5-6 years). Some children cannot develop social and emotional thinking or new ideas, partly because teachers find it challenging to prepare various games related to the discussion topics. However, not all children focus solely on playing; some play with guided direction and purpose. Children have varying limitations, and some still need assistance from teachers or adults.

Research on non-certified teachers at TKIT Umar Bin Khatab with seven years of teaching experience using the inquiry model shows that children enjoy the variety of games provided, leading to enthusiasm for learning and many questions from some children. However, teachers must systematically prepare materials and play activities to stimulate children's learning interests and enhance their critical thinking skills.

Non-certified teachers at RA Nurul Haq and TKIT Umar Bin Khatab have only attended a few training sessions. This lack of systematic and well-planned learning affects the effectiveness of the inquiry-based model in enhancing young children's critical thinking skills. Despite the children's enthusiasm and numerous questions, the teaching process is less effective due to insufficient planning by non-certified teachers who do not regularly participate in training. Consequently, teachers lack an in-depth understanding of systematic learning models, including the inquiry-based model. Therefore, teaching experience is crucial in influencing students' critical thinking skills.

3.2. Achievement of Critical Thinking Skills in Early Childhood at RA Nurul Haq and TKIT Umar Bin Khatab

Research findings indicate a significant achievement of critical thinking skills among early childhood students at RA Nurul Haq and TKIT Umar Bin Khatab. The success in implementing learning models by teachers at these institutions to enhance critical thinking in young children is attributed to the well-prepared lesson plans, particularly by certified teachers.

The steps taken by teachers at RA Nurul Haq and TKIT Umar Bin Khatab in preparing the lessons are as follows: (1) Preparation: In this stage, teachers at RA Nurul Haq and TKIT Umar Bin Khatab have prepared learning tools such as teaching modules, lesson plans (RPP), and assessment materials. Additionally, teachers have arranged various play tools, learning resources, and the necessary classroom setups.

(2) Implementation: During this stage, teachers at RA Nurul Haq and TKIT Umar Bin Khatab have conducted initial activities (such as lining up, praying, greetings, and physical activities); core activities (such as explaining various play activities, guiding children in learning and playing, and stimulating them with thought-provoking questions); and final activities (such as providing evaluations, reflections, and praying).

Implementing the inquiry-based learning model has successfully stimulated young children at RA Nurul Haq and TKIT Umar Bin Khatab to actively communicate, be independent, complete play activities, be enthusiastic about learning, and present their creative results individually and in groups. In the learning process, young children find it easier to understand the material, remember what they have learned, develop a high curiosity, be independent, ask many questions, and find answers independently. The application of the inquiry-based learning model at RA Nurul Haq and TKIT Umar Bin Khatab has enhanced critical thinking skills and

improved six aspects of child development (religious and moral values, physical-motor skills, cognitive skills, language skills, social-emotional skills, and arts).

Implementing the learning model by teachers at RA Nurul Haq Kudus and TKIT Umar Bin Khattab makes children feel like scientists discovering answers to their curiosities by observing, formulating problems, making hypotheses, experimenting, and drawing conclusions. A child's strong curiosity and sense of adventure are evident in problem-solving learning, scientific learning, and experiments. Subsequently, several child characteristics emerge during play, namely (a) explorer, (b) brave, (c) open-minded, (d) problem finder, (e) creative, (f) confident in their reasoning process, (g) curious, and (h) understanding their abilities.

3.3. The Impact of Early Childhood Education Advancement on the Implementation of Inquiry-Based Learning Models Based on Teachers' Teaching Experiences for Enhancing Critical Thinking Skills

Early childhood refers to children aged 0-6 years (according to the 2003 National Education System Law) and 0-8 years, according to child education experts. Early childhood is a group of children in the process of growth and development. Children have patterns of growth and development (fine and gross motor coordination), thinking ability, creativity, language, and communication, encompassing intellectual intelligence (IQ), emotional intelligence (EQ), spiritual intelligence (SQ), or religious intelligence (RQ), by their growth and development stages. The growth and development of early childhood need to be directed towards laying a proper foundation for the holistic development of humans (Ariyanti, 2016).

In line with Article 1, Paragraph 14 of the 2003 National Education System Law, efforts to foster children aged 0-6 are carried out through Early Childhood Education (ECE). The advancement of early childhood education is closely linked to the roles of teachers and parents. Early childhood is experiencing rapid growth and development, thus requiring appropriate stimulation to grow and develop optimally. One effort to enhance the advancement of early childhood education is by implementing an inquiry-based learning model based on teachers' teaching experiences to improve critical thinking skills.

Improving critical thinking skills in early childhood is a core component of 21st-century skills for advancing early childhood education, addressing the rapidly changing world and unpredictable future (Pollarolo et al., 2023; Wolff et al., 2020). Education in facing 21st-century challenges must include skills such as critical thinking and problem-solving, communicating and collaboration, creativity and innovation, information literacy, media literacy, ICT literacy, flexibility and adaptability, initiative, and accountability, as well as leadership and responsibility (Firya et al., 2020; Priyanti & Warmansyah, 2021). Critical thinking, as one of the skills to face 21st-century challenges in life, can apply the ability to think critically, thereby enabling children to make accurate, systematic, and logical decisions, consider various perspectives, solve problems, and cooperate both cooperatively and collaboratively with other learners (Kritis et al., 2020; Palupi et al., 2020; Sutiani et al., 2021). Critical thinking competence is also one of UNESCO's main competencies in education for sustainable development (Pollarolo et al., 2023; Rieckmann, 2018).

Implementing an inquiry-based learning model based on teachers' teaching experiences for enhancing critical thinking skills in early childhood can contribute to the advancement of education and enable them to face the world critically. Studies (Aizikovitsh-Udi & Cheng, 2015) show the importance of educators' consistency in systematically applying learning models to develop early childhood critical thinking skills. Early childhood critical thinking skills positively relate to social-emotional learning (Arslan & Demirtas, 2016).

Discussion

The current study investigates the implementation of the inquiry-based learning model to enhance critical thinking skills in early childhood education, specifically focusing on RA Nurul Haq and TKIT Umar Bin Khatab. Critical thinking is essential for developing higher-order thinking skills in young learners, aligning with previous research highlighting its importance in early

education (Anggraini & Huzaifah, 2017; Magasida, 2017). These skills, including evaluating evidence, formulating arguments, and solving problems, are crucial for children's cognitive development (Nasution, 2018; Syafi'i et al., 2021; Atika et al., 2019). The inquiry-based model, which emphasizes student-centered learning and active participation, effectively promotes critical thinking (Arief et al., 2020; Persky et al., 2019; Fadlilah & Nasrudin, 2020). The current research contributes to this body of literature by examining how teachers' experiences influence the success of this model in early childhood settings, particularly in terms of planning and implementing educational activities that foster critical thinking.

The study's main findings reveal that certified teachers with extensive teaching experience effectively implemented the inquiry-based learning model, leading to significant improvements in children's critical thinking skills. Teachers at RA Nurul Haq and TKIT Umar Bin Khatab demonstrated proficiency in planning, executing, and evaluating inquiry-based activities (Gunardi, 2020; Anggareni et al., 2013). Certified teachers facilitated activities that engaged children in formulating hypotheses, collecting data, and testing their ideas, which are crucial components of the inquiry process (Fadlilah & Nasrudin, 2020; Rosidah et al., 2022; Rakib et al., 2016). These results suggest that experienced teachers are better equipped to create a learning environment that fosters critical thinking. Furthermore, this study highlights the importance of ongoing professional development for teachers to effectively enhance their ability to implement inquiry-based learning (Irwanto et al., 2018; Magasida, 2017; Reeder, 1984).

Compared to previous studies, the current findings align with the notion that inquiry-based learning enhances critical thinking by involving students in active and experiential learning (Arsal, 2017; Sutiani et al., 2021; Kritis et al., 2020). Like Ulfah and Khoerunnisa (2018), this study found that inquiry-based learning provides students with valuable experiences that enhance mental development through critical thinking. The structured approach of the inquiry model, including stages such as formulating problems and hypotheses, collecting data, and drawing conclusions, promotes higher-order thinking (Reeder, 1984; Sofri Fikri Arif & Nur Cahyono, 2020; Siriboe & Harfitt, 2018). However, the results also highlight the challenges faced by non-certified teachers, who often struggle with implementing this model effectively due to a lack of training and experience (Rakib et al., 2016; Fauzi & Djulia, 2019; Anggareni et al., 2013). These findings indicate a need for targeted professional development programs to support non-certified teachers in effectively adopting and implementing inquiry-based learning strategies.

Additionally, the study's findings support the effectiveness of the inquiry-based model in developing critical thinking skills, as documented by other researchers (Anggraini & Huzaifah, 2017; Masrul et al., 2023; Nxumalo, 2021). The structured approach of the model, including stages such as formulating problems and hypotheses, collecting data, and drawing conclusions, has been shown to promote higher-order thinking (Reeder, 1984; Sofri Fikri Arif & Nur Cahyono, 2020; Arslan & Demirtas, 2016). This structured process encourages students to engage deeply with content and develop essential problem-solving skills critical for their overall cognitive development. Furthermore, the role of the teacher as a facilitator is crucial in guiding students through the inquiry process and ensuring that they remain engaged and motivated (Preez & West, 2022; Rothuizen, 2022; Wagner, 2021).

The success of the inquiry-based learning model in enhancing critical thinking skills can be attributed to several factors. First, the teacher's ability to create a supportive learning environment where students feel comfortable exploring and questioning (Irwanto et al., 2018; Magasida, 2017; Han, Blank, & Berson, 2017). Second, certified teachers' well-prepared lesson plans and resources ensure that activities are meaningful and aligned with learning objectives (Wihardjo, Nurani, & Ramadhan, 2020; Siriboe & Harfitt, 2018; Elwick & Green, 2020). The systematic and well-structured nature of the inquiry-based approach also plays a significant role in its effectiveness, as it provides a clear framework for both teachers and students to follow (Gunardi, 2020; Anggareni et al., 2013; Rosidah et al., 2022). However, it is important to interpret these findings cautiously, considering the variability in teachers' experiences and training backgrounds.

Another explanation for the positive outcomes is students' active engagement and motivation during inquiry-based activities. As children participate in hands-on and collaborative learning experiences, they develop critical thinking skills naturally (Preez & West, 2022; Rothuizen, 2022; Nxumalo, 2021). The emphasis on problem-solving and decision-making in the inquiry model helps students to think critically and creatively (Kritis et al., 2020; Palupi et al., 2020; Escamilla & Meier, 2018). The supportive and interactive classroom environment created by inquiry-based learning encourages students to ask questions, explore different perspectives, and engage in reflective thinking (Han, Blank, & Berson, 2017; Hirst, 2019). Nevertheless, this approach is success heavily depends on the teachers' ability to facilitate and guide the inquiry process effectively.

The implications of these findings are significant for early childhood education. Implementing inquiry-based learning can lead to the developing of critical thinking skills, which are crucial for students' academic and personal growth (Nxumalo, 2021; Kewalramani & Veresov, 2022; Fadzil, 2017). Educators and policymakers should prioritize professional development opportunities for teachers to enhance their ability to implement inquiry-based models effectively (Escamilla & Meier, 2018; Han, Blank, & Berson, 2017; Robson, 2022). By fostering an inquiry-oriented approach, schools can better prepare students to meet the challenges of the 21st century, including the ability to think critically, solve problems, and collaborate with others (Probine et al., 2023; Probine et al., 2024; İnönü, Çelebi, Gülhan, & Aras, 2024). Moreover, incorporating inquiry-based learning into the curriculum can contribute to the overall quality of education and help create lifelong learners capable of adapting to a rapidly changing world.

This study underscores the importance of teachers' experience in successfully implementing inquiry-based learning models to enhance critical thinking skills in early childhood education. The findings suggest that certified and experienced teachers can create effective learning environments that promote critical thinking (Aizikovitsh-Udi & Cheng, 2015; Arslan & Demirtas, 2016; Yuliani et al., 2023). Future research should explore strategies to support non-certified teachers in adopting inquiry-based approaches, ensuring all students benefit from this effective pedagogical method. Additionally, further studies could investigate the long-term impact of inquiry-based learning on students' cognitive and social development, providing valuable insights into how best to prepare young learners for future academic and life challenges (Kewalramani, Kidman, & Palaiologou, 2021; Sigirtmac, 2020; Green, 2023).

Conclusion

The primary aim of this study was to describe the implementation of an inquiry-based learning model, grounded in teachers' teaching experiences, to enhance critical thinking skills in early childhood at RA Nurul Haq and TKIT Umar Bin Khatab in Kudus. The findings indicate that when effectively applied by certified and experienced teachers, this model significantly improves young children's critical thinking skills, fostering a balanced development of cognitive, affective, and psychomotor aspects through systematic exploration and problem-solving activities. The study's implications for early childhood education are substantial, as implementing an inquiry-based learning model can enhance critical thinking skills essential for children's academic and personal growth, equipping them to face 21st-century challenges such as critical thinking, creativity, communication, and collaboration. However, limitations such as the study's focus on a specific demographic and the disparity in teacher training and certification levels highlight the need for comprehensive professional development programs. Future research should expand the scope to include a broader range of educational settings, investigate the long-term effects of inquiry-based learning on critical thinking skills, and explore integrating inquiry-based models with other teaching strategies to maximize their effectiveness. In conclusion, this study underscores the positive impact of an inquiry-based learning model, grounded in teachers' teaching experiences, on enhancing critical thinking skills in early childhood education and calls for further research to contribute to the advancement of early childhood education and better prepare students to navigate a rapidly changing world.

Declarations

Author contribution statement

The first author is responsible for data collection and analysis and drafting the article. The second and third authors provide guidance and direction during data collection, analysis, and article drafting.

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